

Claims

Method for selecting a transmission channel for transmission of messages (N) from a mobile terminal to a base station, in which

- the terminal initially sends a send authorization request signal (access preamble - AP) for a specific transmission channel to the base station
- and the base station sends out a response signal (AWS) to the terminal which contains a first decision value (ACK, NACK), with which it is signaled to the terminal signal whether it is authorized to send a message (N) on the requested transmission channel,

characterized in that,

- the base station, on transfer of a first negative decision value (NACK), with which the sending of a message (N) on the requested transmission channel is refused to the terminal, sends a second positive decision value (ACK2) to the terminal with the response signal (AWS), if the terminal is authorized to send a message (N) on another transmission channel,
- and the terminal, on detection of a first negative decision value (NACK) in the response signal (AWS) thoroughly analyzes the response signal (AWS) further as to whether it contains a second positive decision value (ACK2) with which an authorization is signaled to the terminal for sending a message on another transmission channel, and which other transmission channels are available for this,
- and the terminal then sends the message (N) to the base station on one of the transmission channel available

2. Method in accordance with claim 1, characterized in that the transmission channel to be selected is one of a number of logical channels which are implemented by using different

channelization codes ( $C_s$ ) on a physical transmission channel (PRACH) used jointly by a number of terminals for transfer of messages (N) to a base station.

3. Method in accordance with claim 1 or 2, characterized in that the response signal (AWS) contains channel status information (KI) with which a signal is sent to the terminal concerned indicating which other transmission channels are available for sending a message (N).

4. Method in accordance with one of the claims 1 to 3, characterized in that a second decision value (ACK2, NACK2) and/or the channel status information (KI) are encoded within the response signal (AWS) such that, regardless of whether a specific response signal (AWS) contains a second decision value (ACK2, NACK2) at all, the first decision value (ACK, NACK) is able to be decoded unchanged by the terminal in the response signal (AWS).

5. Method in accordance with claim 4, characterized in that a second positive decision value (ACK2) and/or the channel status information (KI) is encoded by at least one signature character sequence ( $b_{21}, \dots, b_{215}$ ) in the response signal (AWS), which is orthogonal to a first set (b) of signature character sequences ( $b_1, \dots, b_{15}$ ), which is used for encoding the first decision value (ACK, NACK) in the response signal (AWS).

6. Method in accordance with claim 5, characterized in that the signature character sequence ( $b_{21}, \dots, b_{215}$ ) for encoding the second positive decision value (ACK2) and/or the channel status information (KI) is created in that each second character of a signature character sequence ( $b_0, \dots, b_{15}$ ) of the first signature character sequence set (b) is multiplied by "-1".

7. Method in accordance with claim 6, characterized in that a second set (b2) of signature character sequences ( $b_{20}, \dots, b_{215}$ ) is used, for encoding of second positive decision values (ACK2) and/or of channel status information (KI) in the response signal (AWS),

with the signature character sequence ( $b_{20}, \dots, b_{215}$ ) of this second signature character sequence set (b2) being created in each case from the signature character sequence ( $b_0, \dots, b_{15}$ ) of the first signature character sequence sets (b) by multiplying each second character by "-1".

8. Method in accordance with one of the claims 5 to 7, characterized in that, the second positive decision value (ACK2) is transferred jointly with the channel status information (KI) in a character string (RS) which is encoded with a specific signature character sequence ( $b_{2x}$ ) orthogonal to the first signature character sequence set (b).

9. Method according to claim 8, characterized in that the signature character sequence ( $b_{2x}$ ) is assigned to the base station.

10. Method in accordance with one of the claims 5 to 7, characterized in that the second positive decision value (ACK2) for a specific terminal is encoded with a specific signature character sequence ( $b_{20}, \dots, b_{215}$ ) orthogonal to the first signature character sequence set (b) which is assigned to the transmission channel, for which the terminal concerned has previously sent an access preamble (AP) to the base station.

11. Method in accordance with one of the claims 2 to 10, characterized in that the response signal (AWS) contains as channel status information (KI) a second negative decision

value (NACK2) for each transmission channel occupied.

12. Method according to claim 11, characterized in that the second negative decision values (NACK2) are encoded in each case with the signature character sequences from the first set (b) of signature character sequences assigned to the occupied transmission channels.

13. Method in accordance with claim 11, characterized in that the second negative decision values (NACK2) are each encoded with signature character sequences of the second set (b2) of signature character sequences which are assigned in each case to the relevant transmission channels concerned.

14. Method for selecting a transmission channel for transmission of messages (N) from a mobile terminal to a base station, in which

- The base station of the terminal initially receives a send authorization request signal (AP) for a specific transmission channel,
- and the base station then sends out a response signal (AWS) to the terminal which contains a first decision value (ACK, NACK) with which it is signaled to the terminal whether it is authorized to send a message (N) on the requested transmission channel or not,

characterized in that the base station, on transfer of a first negative decision value (NACK), with which the sending of a message (N) on the requested transmission channel is refused to the terminal, sends a second positive decision value (ACK2) to the terminal with the response signal (AWS) when the terminal is authorized to send a message (N) on another transmission channel.

15. Method for selecting a transmission channel for transmission of messages (N) from a mobile terminal to a base

station, in which

- the terminal initially sends an access preamble (AP) for a specific transmission channel to the base station, and receives from the base station a response signal (AWS),
- and in the response signal (AWS) a first decision value (ACK, NACK) is detected, with which the terminal is signaled whether it is authorized to send a message (N) on the requested transmission channel or not,

characterized in that,

the terminal, on detection of a first negative decision value (NACK), with which the sending of a message (N) on the requested transmission channel is refused to the terminal, the response signal (AWS) is thoroughly analyzed as to whether it contains a second positive decision value (ACK2), with which a signal is sent to the terminal authorizing it to send a message (N) on another transmission channel and which other transmission channels are available for this, and the terminal then sends the message (N) on one of the available transmission channels to the base station.

16. Base station with a transceiver unit and a processor unit with means for selecting a transmission channel for transmission of messages (N) from a mobile terminal to the base station, comprising

- a decoding device for detection of a send authorization request signal (AP) sent by a terminal (AP) for a specific transmission channel,
- a channel release unit to determine which transmission channels are currently available for sending a message (N),
- and an encoding device, to send a response signal (AWS) to the terminal which contains a first decision value (ACK, NACK), with which it is signaled to the terminal whether it is authorized to send a message (N) on the requested transmission channel or not,

characterized in that  
the processor unit is embodied such that, on transfer of a first negative decision value (NACK), with which the sending of a message (N) on the requested transmission channel is refused to the terminal, a second positive decision value (ACK2) is sent to the terminal with the response signal (AWS) when the terminal is authorized to send a message (N) on another transmission channel.

17. Mobile radio network with a number of base stations in accordance with claim 16.

18. Mobile terminal with a transceiver unit and a processor device with means for selecting a transmission channel for transmission of messages (N) from the mobile terminal to a base station, comprising

- an authorization unit for generation of a send authorization request signal (AP) for a specific transmission channel,
- and a decoding device which decodes a response signal (AWS) sent by the base station in order to detect a first decision value (ACK, NACK) with which a signal is sent to the terminal indicating whether it is authorized to send a message (N) on the requested transmission channel or not,

characterized in that

- the decoding device is embodied such that on detection of a first negative decision value (NACK) in the response signal (AWS) it further thoroughly analyses the response signal (AWS) as to whether it contains a second positive decision value (ACK2) with which the terminal is authorized to send the message (N) on another transmission channel and indicating which other transmission channels are available for this,
- and the processor device is embodied such that the message (N) is then sent on one of the available transmission

channels to the base station.